Corn Germplasm Resists Corn Borers

Entomologist Dean Barry dissects stalks of his new corn strain as he and research assistants Arnulfo Antonio (middle) and Chris Zirkle evaluate damage from second-generation European corn borers in an artificially infested plot. (1083X1401-18)

A source of corn germplasm that will resist the ravages of the second generation of European corn borers when the plants are flowering is now available to plant breeders. It is called MOECB2(S1)C5.

Until now, breeding of corn to hold the insect pest in check has been generally focused on using germplasm that resists attack of first-generation borers while corn is in the whorl stage, says ARS entomologist Dean Barry, Columbia, Mo.

ARS scientists in Mayaguez, P.R., and Ankeny, Iowa, and scientists of the Missouri Agricultural Experiment Station cooperated with Barry in developing MOECB2(S1)C5 through six selection cycles.

By the end of the third cycle of selection, second-generation borers tunneled an average of only 6 inches into stalks of the resistant corn. That's in contrast with 12 to 20 inches in susceptible cultivars and 10 inches in PR-Mo2, the resistant germplasm source that the scientists crossed with Mo-SQB to start recurrent selections.

The success that the scientists demonstrated in developing resistance to second-generation corn borers may encourage further breeding efforts.

One further encouraging note is that once corn hybrids with resistance to European corn borers are developed, perhaps no new race of the insect will evolve to break the resistance. Decades ago, ARS scientists at Ankeny began deliberately infesting young corn plants with first-generation borers to see if the resistance could be broken. It wasn't.

When corn with resistance to second-generation borers becomes commonplace, however, farmers should not let down their guard, says Barry. If every farmer planted resistant hybrids the corn borer population would be small, but a few borers would still survive the winter. If the next season a farmer planted a nonresistant hybrid, the borer population could rise rapidly, given the right conditions.

It is hoped that resistance to second-generation corn borers can be incorporated into high-yielding hybrids by commercial firms.

"Not too many experiment stations nowadays nor ARS laboratories develop hybrids," says Barry. "Public researchers may develop a few inbred lines with a well-defined package of genetic traits, but the seed companies, once they get germplasm, might reassemble it into different genetic packages anyway."

MOECB2(S1)C5 was released as a germplasm source to help farmers obtain hybrids with resistance to second-generation borers as quickly as possible after the trait had been identified, says Barry.

Dean Barry is located in Room I-67, Agriculture Bldg., University of Missouri, Columbia, Mo. 65211.—(By Ben Hardin, Peoria, Ill.) ■

1983 Index

A

Abscission agents, effect on orange flavor, Jan/Feb-16
Alcohol, from cellulose, fermented by yeast, Apr-15
Alfalfa
- as an annual crop, Jan/Feb-7
- breeding for sticky hairs, Sept-7
- fights insects with sticky hairs, Sept-6
- herbicide tolerance in seeds, Mar-13

Animal breeding
- for lean pork, July/Aug-11
- for swine herd replacements, May-6

Animal diseases
- arthritis in goats, Sept-11
- bur buttercup poisoning, May-15
- locoweed poisoning, Mar-15
- mastitis diagnosed by computer, Apr-12

Apple
- new variety for Southeast U.S., Mar-16
- storage cooling fans, Oct-16

Aquaculture, extending the season, Jan/Feb-16
Arthritis in goats, Sept-11
Aseptic bags, for fruit purees, Sept-10
Asian Parasite Laboratory, Jan/Feb-4
Attractant, male maize weevil, Nov/Dec-10

B

Bacteria
- *Rhizobium*, from China, June-6
- soil, source of nitrogen, May-10

Barley
- double-cropping for forage, July/Aug-14

Beans
- protection from ozone, Mar-16
- solid-seeding, Jan/Feb-15
- sprouts, storage temperature, July/Aug-15

Beef cattle selection, Oct-11
Bees
- breeding for gentleness, Apr-14
- parasitic mites not in U.S., Nov/Dec-12
- wild, as pollinators, Jan/Feb-8

Big knee disease, in goats, Sept-11
Biocontrol
- of Colorado potato beetle, Apr-15
- of cotton insects, May-7

Blueberries, rabbiteye, increased acreage, Sept-15
Breast milk, and infant growth rates, July/Aug-15
Bur buttercup poisoning, May-15

C

Cablegation, broadening applications, July/Aug-8
Calving, effects of early feeding on, Nov/Dec-13
Cancer inhibitor, from poisonous seeds, May-4
Celery, sensitivity to salt, Jan/Feb-15
Chemicals
- computer language for formulas, Oct-12
- pruning in apple orchards, Mar-12
- pollutants, tracking sources, June-4
- through irrigation systems, Sept-14

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- fights insects with sticky hairs, Sept-6
- herbicide tolerance in seeds, Mar-13

Animal breeding
- for lean pork, July/Aug-11
- for swine herd replacements, May-6

Animal diseases
- arthritis in goats, Sept-11
- bur buttercup poisoning, May-15
- locoweed poisoning, Mar-15
- mastitis diagnosed by computer, Apr-12

Apple
- new variety for Southeast U.S., Mar-16
- storage cooling fans, Oct-16

Aquaculture, extending the season, Jan/Feb-16
Arthritis in goats, Sept-11
Aseptic bags, for fruit purees, Sept-10
Asian Parasite Laboratory, Jan/Feb-4
Attractant, male maize weevil, Nov/Dec-10

B

Bacteria
- *Rhizobium*, from China, June-6
- soil, source of nitrogen, May-10

Barley
- double-cropping for forage, July/Aug-14

Beans
- protection from ozone, Mar-16
- solid-seeding, Jan/Feb-15
- sprouts, storage temperature, July/Aug-15

Beef cattle selection, Oct-11
Bees
- breeding for gentleness, Apr-14
- parasitic mites not in U.S., Nov/Dec-12
- wild, as pollinators, Jan/Feb-8

Big knee disease, in goats, Sept-11
Biocontrol
- of Colorado potato beetle, Apr-15
- of cotton insects, May-7

Blueberries, rabbiteye, increased acreage, Sept-15
Breast milk, and infant growth rates, July/Aug-15
Bur buttercup poisoning, May-15

C

Cablegation, broadening applications, July/Aug-8
Calving, effects of early feeding on, Nov/Dec-13
Cancer inhibitor, from poisonous seeds, May-4
Celery, sensitivity to salt, Jan/Feb-15
Chemicals
- computer language for formulas, Oct-12
- pruning in apple orchards, Mar-12
- pollutants, tracking sources, June-4
- through irrigation systems, Sept-14

Coal pollutants, as fertilizer, July/Aug-7
Codling moth
  control in storage with gamma rays, Nov/Dec-15
  effects of temperature on mating, Apr-16
Computer
  diagnosing mastitis, Apr-12
  forecasting soil erosion, Mar-4
  language for chemicals, Oct-16
Cooling fans in apple storage, Oct-12
Conservation tillage
  nitrogen needs of sugarbeets under, Apr-15
  stubble mulching, Apr-12
Cotton
  controlling weeds, Mar-15
  durable press, Nov/Dec-4
  exotic, tolerates semiaridity, July/Aug-4
  insect biocontrol, May-7
  low-nitrogen and drought resistance, Mar-14
Cranberry girdlers, on Douglas firs, June-14
Curly indigo, in rice, Jan/Feb-12
Curly top disease detection, May-13

D

Dairy cows
  feed costs for crossbreds, June-7
  mastitis diagnosed by computer, Apr-12
Douglas fir, cranberry girdler damage, June-14
Drought
  and acidic soil, July/Aug-14
  effects on native and imported grasses, Oct-15
  resistance in low-nitrogen cotton, Mar-14

E

Editorials
  ARS Program Plan—Goals and Objectives, Jan/Feb-2
  Science and Our Resource Heritage, Mar-2
  Tillage—A Fascinating Evolution, Apr-2
  Studying Earth's Thin Crust, May-2
  Watershed Management—A Conservation Priority, June-2
  Managing Our Water Resources, July/Aug-2
  Research to Improve Irrigation and Drainage, Sept-2
  Replenishing Our Human Resources in Agriculture, Oct-2
  Science Power for the 21st Century, Nov/Dec-2
ELISA, for monitoring curly top, Mar-13
EPIC, computer modeling of soil erosion, Mar-6
Erosion
  and sedimentation, June-8
  and soil fertility, May-8
  control and streambanks, June-10
  effects on crop productivity, Mar-4
  in row-cropped soybeans, Sept-16
Exports, research for, Apr-4

F

Feeding time for heifers, effect on calving, Nov/Dec-13
Fertilizer
  from coal pollutants, July/Aug-7
  placement in reduced tillage, May-12
Fire, to improve rangeland, Oct-10
Flavor
  orange, effects of abscission agents, Jan/Feb-16
  soybean oil, Jan/Feb-11
Food choices, provide zinc for elderly, Oct-14
Forage
  crops, the many roles of, Mar-8
  double cropping, July/Aug-14
  legumes, disease control, May-13
  turnips as, Nov/Dec-13
Fruit
  chemical pruning, Mar-12
  mechanical harvesting, Nov/Dec-14
  moisture, reducing by osmosis, Nov/Dec-11
  pawpaw, Apr-7
  purees, in aseptic bags, Sept-10
  purees, temperature control, Jan/Feb-13
Fumigating grain bins, Sept-14
Fungus to control curly indigo, Jan/Feb-12

G

Gamma rays, for codling moth control, Nov/Dec-15
Genetic
  improvement in honeybees, Apr-14
  swine herd improvement, May-6
  variations in seed samples, Nov/Dec-16
Germplasm
  for the Green Revolution, Nov/Dec-9
  viruses in, Oct-6
Goats, arthritis in, Sept-11
Grain bins, fumigating, Sept-14

H

Hairy alfalfa
  breeding, Sept-7
  fights insects, Sept-6
Herbicide
  resistance in sugarbeets, May-16
  tolerant alfalfa seeds, Mar-13
Human nutrition
  effects of soy protein, Sept-12
  U.S. diet study results, Oct-14
  zinc in diets for elderly, Oct-14

I

Insects
  codling moth, Apr-16, Nov/Dec-15
  Colorado potato beetle, Apr-15
  Columbia root-knot nematode, June-15
  cotton bollworm, May-7
  cranberry girdler, June-14
  maize weevil, Nov/Dec-10
  tobacco budworm, May-7
Irrigation
  and pesticide runoff, June-15
  applying chemicals through, Sept-14
  cablegation, July/Aug-8
  reduction in winter wheat, Sept-12
  turbulant fountain screen, Sept-4
Itchgrass, predicting potential range, Oct-13

L

Lab techniques for plant pathologists, July/Aug-16
Lean pork, economics of breeding for, July/Aug-11
Lignin, dissolved by household bleach, July/Aug-12
Locoweed poisoning in cattle, Mar-15

M

Maize weevil attractant, Nov/Dec 10
Mastitis diagnosed by computer, Apr-12
Measurement techniques
  for nitrogen losses, May-15
  for soil gases, Jan/Feb-14
Meat, processed with starter culture, June-7
Milestones in ARS Research, Nov/Dec-4

N

Nematode, Columbia root-knot, June-15
Nitrogen
  and drought resistance in cotton, Mar-14
  fixation and Chinese *Rhizobium*, June-6
  measuring losses of, May-15
  soil bacteria as source of, May-10

O

Orange
  flavor, and abscission agents, Jan/Feb-16
  purees, temperature control, Jan/Feb-13
Osmotic concentration of fruit, Nov/Dec-11
Ozone
  protecting beans from, Mar-16
  tolerance of pines, June-16

P

Parasite, laboratory in Asia, Jan/Feb-4
Pawpaw, potential U.S. fruit crop, Apr-7
Permanent wheel tracks, benefits, May-16
Pesticide
  degradation by soil microorganisms, Oct-4
  runoff study completed, June-15
  vapor dispersion theory questioned, Sept-13
Pines, ozone tolerance, June-16
Plant disease
  curly top in sugarbeets, May-13
  root rot in sugarbeets, Jan/Feb-15
  sclerotinia in forage legumes, May-13
  wheat streak mosaic, Nov/Dec-15
Pollination, by wild bees, Jan/Feb-8

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Pollutants
from coal as fertilizer, July/Aug-7
tracking sources of, June-4
Pork production
economics of breeding for leanness, July/Aug-11
sires' genetic value, May-6
Porous asphalt, for returning runoff to groundwater, July/Aug-6
Potatoes, volunteer, control, Sept-15
Purees
orange, temperature control, Jan/Feb-13
packed in aseptic bags, Sept-10

R

Rangeland
controlled burning to improve, Oct-10
grasses and drought, Oct-15
improved by machine, Oct-8
REPHLEX, experimental watershed data, July/Aug-5
Rhizobium, Chinese, fast-growing, June-6
Root rot, in hilled sugarbeets, Jan/Feb-15
Runoff
captured by porous asphalt, July/Aug-6
pesticide study completed, June-15
Russian wildrye is reclassified, Sept-15

S

Salt leaching from stripmines, Apr-16
Sclerotinia disease in forage legumes, May-13
Screwworm eradication, by sterility principle, Nov/Dec-6
Sedimentation, June-8
Seed
-borne viruses in germplasm, Oct-6
genetic diversity in beans, Nov/Dec-16
herbicide-tolerant alfalfa, Mar-3
moisture for ultracold storage, Oct-15
source of cancer inhibitor, May-4
Soil
acidity and drought, July/Aug-14
bacteria, source of nitrogen, May-10
erosion, modeling, Mar-4
fertility, May-8
gases, test for, Jan/Feb-14
maintaining productivity of, Mar-8
microorganisms and degrading pesticides, Oct-14
microorganisms and fertilizer placement, May-12
Soybean
oil, flavor stability, Jan/Feb-11
row-cropped, and erosion, Sept-16
seed inoculation, Nov/Dec-16
Soy protein, effects on iron levels, Sept-12
Starter culture for processed meats, June-7
Stripmines, reclaiming for agriculture, June-12
Stubble mulching, Apr-12
Sugarbeets
herbicide resistance, May-16
nitrogen needs, Apr-15

T

Tillage, national laboratory, Apr-8
Tobacco budworm, biocontrol, May-7
Topsoil, the best fertilizer, May-14
Turbulent fountain screen, in irrigation, Sept-4
Turnips, as a forage, Nov/Dec-13

U

Ultracold storage, seed moisture levels for, Oct-15
Universal Soil Loss Equation, Nov/Dec-5

V

Vaccines, ARS research accomplishments, Nov/Dec-7
Vapor movement theory upset, Sept-13
Viruses
big knee disease, in goats, Sept-11
curly top, May-13
in germplasm, Oct-6
wheat streak mosaic, Nov/Dec-15
Volunteer potatoes, control of, Sept-15

W

Watershed data, in REPHLEX, July/Aug-5
Watertables
controlling with fabridams, Sept-8
regulating with subsurface drainage, Mar-13
Weevil attractant, maize weevils, Nov/Dec-10
Wheat
importance of topsoil to, May-14
streak mosiac, disease, Nov/Dec-15
Wild bees, as pollinators, Jan/Feb-8
Winter wheat
hot wind damage, July/Aug-15
reducing irrigation, Sept-12
resistance to freezing, Oct-16

Y

Yeast ferments cellulose to alcohol, Apr-15

Z

Zinc, in elderly diets, Oct-14